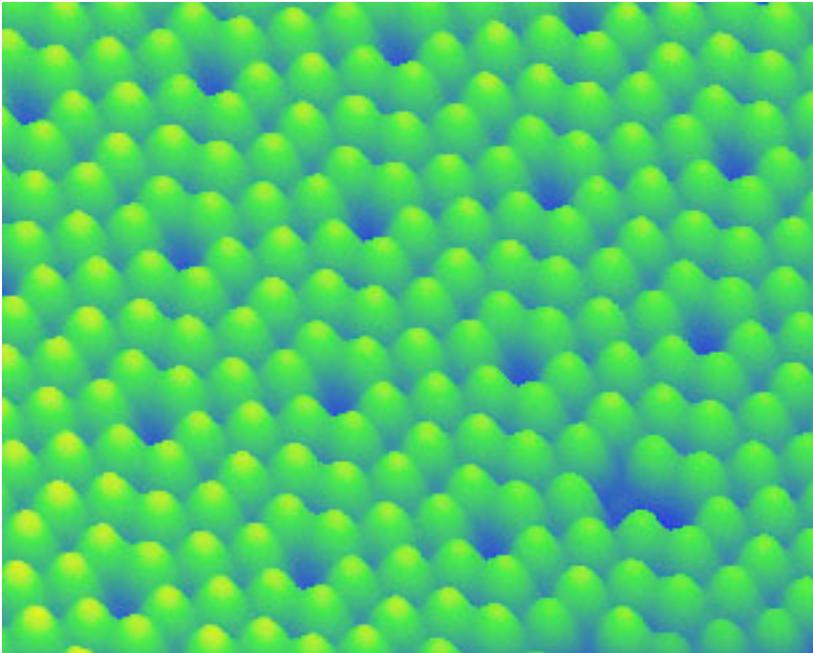


The Atom

Atoms are extremely, extremely small.

Ex. 20 thousand billion billion fit on a head of a penny.

They are made up of even tinier particles



The Nucleus

The center of the atom

Very dense-packed

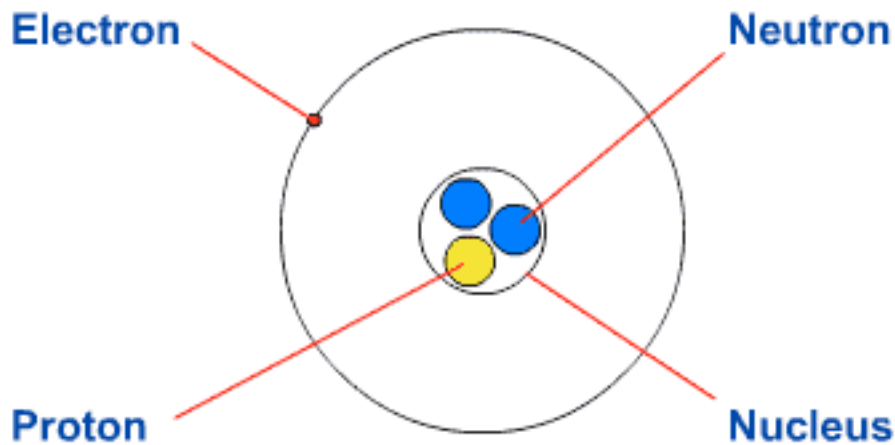
Inside

Contains protons and neutrons

Protons are positively charged

Neutrons have no charge

Both have about the same mass (1 amu)



http://www.classzone.com/books/earth_science/terc/content/investigations/es0501/es0501page03.cfm

Outside The nucleus

Electrons – negatively charged particles

Smaller in mass compared to protons and neutrons (almost 0 amu)

When atoms have the same number of protons and electrons they are labeled as **neutral**.

If they have more electrons or more protons they are labeled an **ion**

Positive ion- More protons because it loses an electron

Negative ion- more electrons because it gains an electron.

<http://web.visionlearning.com/custom/chemistry/animations/CHE1.3-an-ions.shtml>

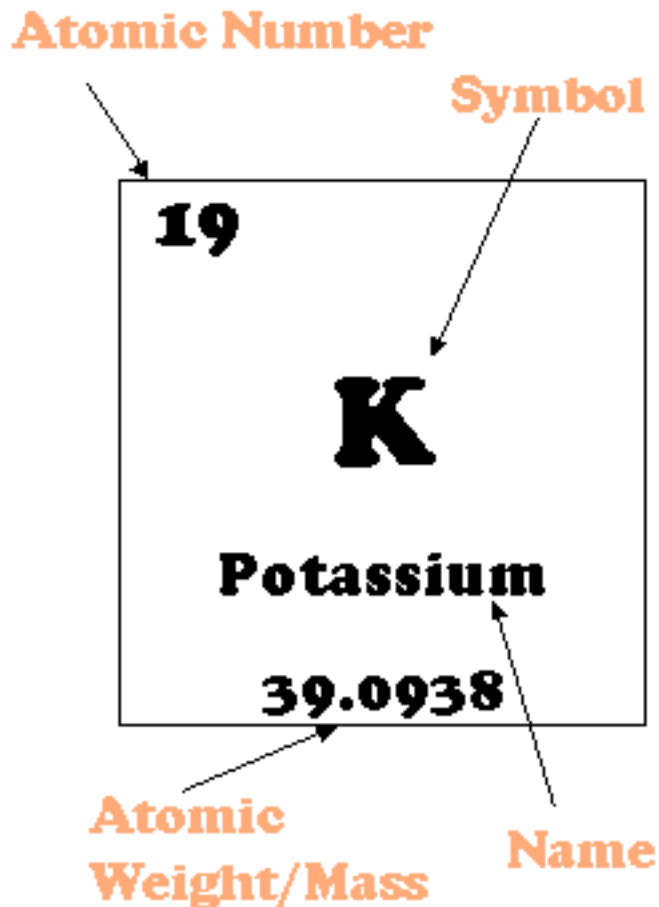
**All elements have different atoms from each other.
They contain different numbers of protons, electrons
and neutrons.**

The Atomic Number

The number of protons in an atom

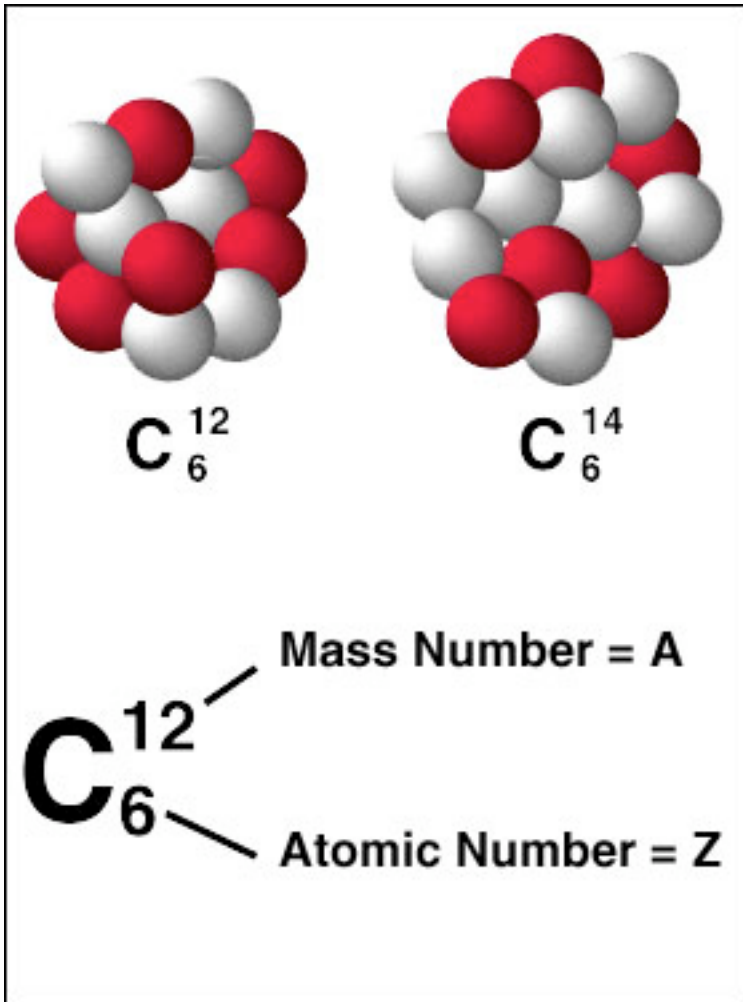
Every atom of an element has the same atomic number

Ex. Carbon has an atomic number of 6. This means it has six protons and every carbon atom has 6 protons.



Isotopes

Atoms of an element with the same number of protons but a different number of neutrons. This creates a different atomic mass.



Mass Number

Protons + Neutrons

Isotopes are written with the name of the element and the mass number.

Ex. Hydrogen- 5

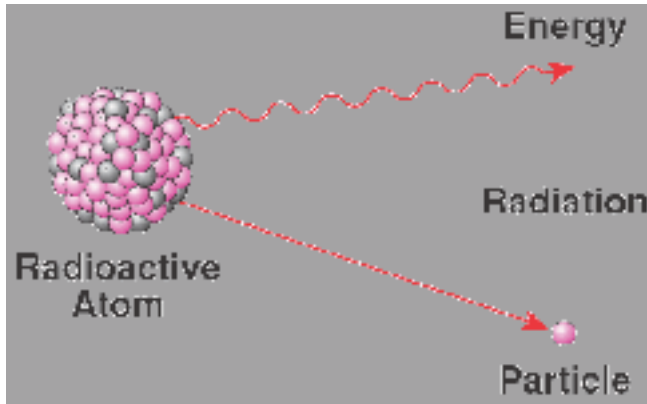
This tells that the atom is an isotope of hydrogen.

To find the number of neutrons of an isotope:

The mass number – the atomic number = neutrons

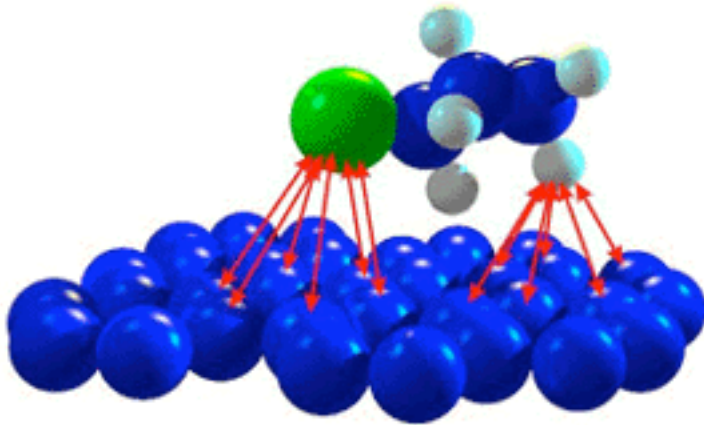
Ex. $5 - 1(\text{hydrogen's atomic number}) = 4$ neutrons

Unstable or radioactive atoms- have a nucleus that will change over time. As they change they will give off small particles of energy.

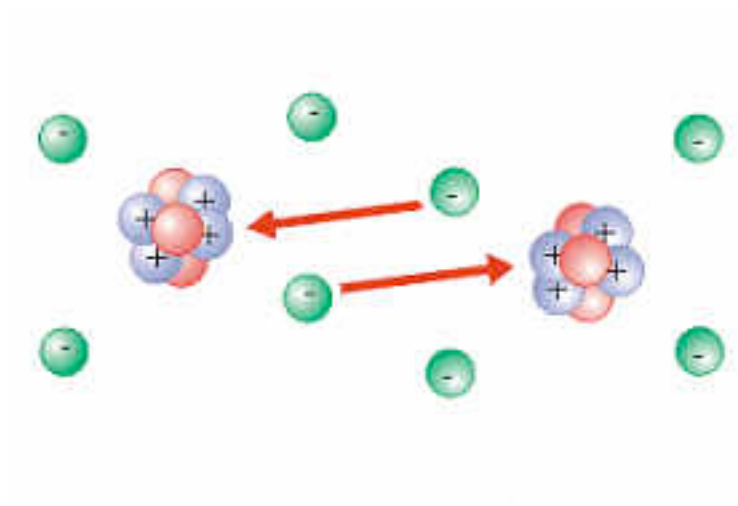


Forces In an Atom

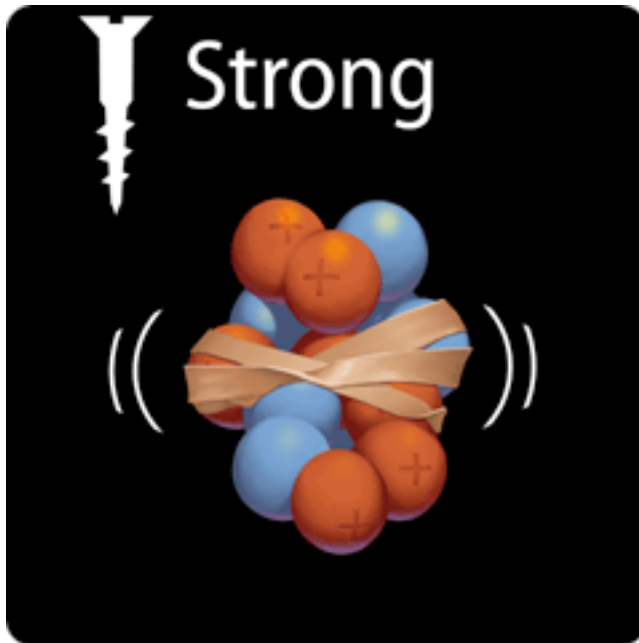
Gravitational-gravity



Electromagnetic- opposites attract while same repel



Strong- force between protons and neutrons



Weak- in unstable atoms it allows a neutron to change into a proton or electron



